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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/927,134	08/10/2001	Robert Bertram Ogle JR.	M-7525 US	4250

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EXAMINER

WEISS, HOWARD

ART UNIT PAPER NUMBER

2814

DATE MAILED: 04/10/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/927,134

Applicant(s)

OGLE ET AL.

Examiner

Howard Weiss

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

Art Unit: 2814

Attorney's Docket Number: M-7525 US

Filing Date: 8/10/01

Continuing Data: Claims benefit of Provisional Application 60/224,658 (8/11/00)

Claimed Foreign Priority Date: none

Applicant(s): Ogle, Jr. et al. (Halliyal)

Examiner: Howard Weiss

### ***Drawings***

1. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

- (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
- (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1 and 20 to 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Halliyal et al. (U. S. Patent No. 6,319,775).

Halliyal et al. show all aspects of the instant invention (e.g. Figure 4 and Column 5 Line 40 to Column 6 Line 58) including:

- forming a second silicon dioxide layer **32** by thermally depositing said second silicon dioxide layer on a silicon nitride layer **30** using either RTCVD using a single wafer tool or LPCVD in a batch furnace
- annealing the resultant ONO layer (i.e. **28/30/32**)
- all part of a EEPROM flash memory device

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1 to 21, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (U. S. Patent No. 5,836,772) and Misra et al. (IEEE 1996).

Chang et al. show all aspects of the instant invention (e.g. Figure 1 and Column 5 Lines 29 to 35) including:

- forming a second silicon dioxide layer **16** by thermally depositing said second silicon dioxide layer on a silicon nitride layer **14**

- all part of a EEPROM flash memory device (Column 4 Lines 24 to 27)

Chang et al. do not show the annealing of the ONO layer in a batch furnace or a Rapid Thermal Annealing tool using NO or N<sub>2</sub>O in the gas mixtures claimed and using argon, nitrogen and/or oxygen as carrier gases or using RTCVD for forming said second silicon dioxide layer. Misra et al. teach (Section IIIC. EFFECT OF POST-DEPOSITION ANNEALING Pages 640 to 642) to use either a batch furnace or a Rapid Thermal Annealing tool using NO or N<sub>2</sub>O in the gas mixtures claimed and to use argon, nitrogen and/or oxygen as carrier gases and to use RTCVD for forming silicon dioxide layers (Section II EXPERIMENT Page 637) to improve the quality of the oxides (Section V. Conclusion Page 645). It would have been obvious to a person of ordinary skill in the art at the time of invention to use either a batch furnace or a Rapid Thermal Annealing tool using NO or N<sub>2</sub>O in the gas mixtures claimed and to use argon, nitrogen and/or oxygen as carrier gases and to use RTCVD for forming silicon dioxide layers as taught by Misra et al. in the process of Chang et al. to improve the quality of the silicon dioxide.

### ***Conclusion***

6. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. Papers should be faxed to Art Unit 2814 via the Art Unit 2814 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(703) 308-7722** or **-7724**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard Weiss at **(703) 308-4840** and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via **Howard.Weiss@uspto.gov**.

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Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2800 Receptionist at **(703) 308-0956**.

8. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass(es): 438/261, 591	4/4/02
Other Documentation: none	
Electronic Database(s): EAST, IEL	4/4/02



Howard Weiss  
Patent Examiner  
Art Unit 2814

HW/hw  
5 April 2002